

REMARKS

Claims 1, 23 and 30 are hereby amended; claims 2, 4 and 26 have been canceled, and new claims 36 and 37 have been added. Support for the amendments is found, *inter alia*, at page 10, lines 25-31; page 17, lines 4-5; page 42, line 16; page 18, lines 7-9; page 19, lines 11-14; page 42, line 16 and original claim 2. No new matter is added by any of the amendments. Claims 1, 23-25 and 30-37 are in the application and are presented for further examination.

The rejection of claims 1-4 and 23-35 under 35 U.S.C. §112, first paragraph, is believed overcome by the foregoing amendments. Reconsideration and withdrawal of the rejection are accordingly, respectfully requested.

Insofar as the rejection of claims 1, 2 and 4 under 35 U.S.C. § 103(a) over Inoue et al., US 5,608,123 may be thought applicable to amended claim 1, and the rejection of claims 23-26 under 35 U.S.C. § 103(a) over Inoue et al. in view of Niida et al., *J. Non-Crystalline Solids*, 306:292-299 (2002) may be thought applicable to amended claims 23-25, they are respectfully traversed.

In particular, amended claim 1 now recites that only an acid (e.g., hydrochloric acid or acetic acid) is used as the catalyst of the sol-gel method. In other words, only an acid is used as the sole catalyst of the sol-gel method in the claimed invention. By using an acid as the sole catalyst, the target product having superior characteristics is obtained (see Examples 1-1 to 1-5 and Examples 2-1 to 2-20 of the specification). It is generally known that the catalyst of the sol-gel method is used for accelerating hydrolysis and polycondensation of the sol-gel raw material (i.e., the claimed silicon alkoxide).

In contrast with the claimed invention, Inoue et al. (see column 11, line 59 to column 12, line 11), adds 28% aqueous ammonia after the addition of 0.01 normal hydrochloric acid solution. Thus, two catalysts, (i.e., aqueous ammonia and hydrochloric acid solution) are used in the process of Inoue et al. As a result the polycondensation proceeds drastically, and, consequently, the dried gel after washing with water was not melted, but instead was dried again by a heating at 120°C for 6 hours (see column 12, lines 9-11 of Inoue et al.).

Unlike Inoue et al., in the present invention as defined by amended claims 1 and 23, the dried gel, produced by using only an acid as the sole catalyst of the sol-gel method, is melted by heating at a temperature of from 100°C to 300°C. Consequently, the resulting organic-inorganic hybrid glassy material in the claimed invention has a low melting point and is therefore substantially different from the polyorganosiloxane obtained Inoue et al. (see column 12, line 11).

Accordingly, Applicants respectfully submit that the process defined by amended claims 1 and 23 is distinctly different from that taught by Inoue et al. and/or the combination of Inoue et al. and Niida et al., and reconsideration and withdrawal of the rejections are therefore respectfully requested.

Insofar as the rejection of claims 30, 31, 34 and 35 under 35 U.S.C. § 103(a) over Minami et al., US 2003/0124467 may be thought applicable to amended claim 30 and dependent claims 31, 34 and 35, and insofar as the rejection of claims 32 and 33 under 35 U.S.C. § 103(a) over Minami et al. in view of Minami et al., 2002/0160153 may be thought applicable to claims 32 and 33, they are also respectfully traversed.

Independent claim 30 has now been amended to recite that the phenyltrialkoxysilane and the second silane are present in a mol percent ratio of from 7:3 to 9:1 based on a total number of moles of phenyltrialkoxysilane and second silane. These ratios find support in the specification at page 18, lines 7-9 and page 19, lines 12-14 as follows:

Regarding page 18, lines 7-10 of the specification, phenyltriethoxysilane has a molecular weight of 240.4 and a density of 0.99 g/mL and methyltriethoxysilane has a molecular weight of 178.3 and a density of 0.89 g/mL. Therefore, 10 mL of phenyltriethoxysilane equals 41.2 mmol (since $(10 \text{ mL} \times 0.99 \text{ g/mL})/240.4 = 0.0412 \text{ mol} = 41.2 \text{ mmol}$). Similarly, 1 mL of methyltriethoxysilane equals 5.0 mmol (since $(1 \text{ mL} \times 0.89 \text{ g/mL})/178.3 = 0.0050 \text{ mol} = 5.0 \text{ mmol}$). Therefore, phenyltriethoxysilane is present in an amount of 90 mol-%, based on the total number of moles of phenyltriethoxysilane and methyltriethoxysilane (since $41.2 \text{ mmol}/(41.2 \text{ mmol} + 5.0 \text{ mmol}) = 0.9 = 90$

mol%), and methyltriethoxysilane is therefore present in an amount of 10 mol%, based on the total number of moles of phenyltriethoxysilane and methyltriethoxysilane (since $5.0 \text{ mmol} / (41.2 \text{ mmol} + 5.0 \text{ mmol}) = 0.1 = 10 \text{ mol\%}$). Thus, the ratio of 9:1 is disclosed in the specification (page 18, line 8).

Regarding page 19, lines 12-15 of the specification, diethoxydiphenylsilane has a molecular weight of 272.4 and a density of 1.03 g/mL. Therefore, 9 mL of phenyltriethoxysilane equals to 37.1 mmol (since $(9 \text{ mL} \times 0.99 \text{ g/mL}) / 240.4 = 0.0371 \text{ mol} = 37.1 \text{ mmol}$). Likewise, 4 mL of diethoxydiphenylsilane equals 15.1 mmol (since $(4 \text{ mL} \times 1.03 \text{ g/mL}) / 272.4 = 0.0151 \text{ mol} = 15.1 \text{ mmol}$). Therefore, phenyltriethoxysilane is present in an amount of 70 mol%, based on the total number of moles of phenyltriethoxysilane and diethoxydiphenylsilane (since $37.1 \text{ mmol} / (37.1 \text{ mmol} + 15.1 \text{ mmol}) = 0.711 = \text{about } 70 \text{ mol\%}$), and diethoxydiphenylsilane is present in an amount of 30 mol%, based on the total number of moles of phenyltriethoxysilane and diethoxydiphenylsilane (since $15.1 \text{ mmol} / (37.1 \text{ mmol} + 15.1 \text{ mmol}) = 0.289 = \text{about } 30 \text{ mol\%}$). Thus, the ratio of 7:3 is also disclosed in the specification (page 19, line 13).

As noted above, amended claim 30 now requires that the ratio of the phenyltrialkoxysilane to the second silane in mol percent based on the total number of moles of the phenyltrialkoxysilane and the second silane be from 7:3 to 9:1. In other words, the amount of the phenyltrialkoxysilane must be much larger than that of the second silane. This is very effective for producing the target organic-inorganic hybrid glassy material having superior characteristics (see page 7, lines 12-15 of the specification), which is supported by Examples 1-2, 1-3, 1-4, 1-5, 2-1 and 2-11.

In contrast, Minami '467 (paragraph [0077], lines 1-2) discloses 0.45 mol of phenyltriethoxysilane and 0.45 mol of diphenyldiethoxysilane. In other words, the ratio is 1:1. Thus it can be seen that the inventive process defined by claims 30-35 is distinctly different from the process of Minami et al. '467 and/or Minami et al. '467 in view of Minami et al. '153. Reconsideration and withdrawal of the rejection are accordingly, respectfully requested.


In view of the foregoing amendments and remarks, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

If there are any questions regarding this Reply or the application in general, a telephone call to the undersigned at (202) 624-2845 would be appreciated since this should expedite the examination of the application.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038788.53357US).

Respectfully submitted,

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